

REMARKS

Reconsideration of the above-identified application in view of the foregoing amendments and following remarks is respectfully requested.

Claims 9-24 are pending, among which claims 9-18 were withdrawn in the Office Action dated January 6, 2006. Claims 19-24 were all rejected under 35 U.S.C. § 112, ¶1 for failing to comply with the written description requirement as well as ¶2 for failing to particularly point out and distinctly claim the subject matter. Claims 19-23 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,754,300 to Magome et al. (“Magome”), U.S. Patent No. 5,808,910 to Irie et al. (“Irie”), and U.S. Patent No. 4,962,318 to Nishi (“Nishi”). In addition, claims 23-24 are also rejected under 35 U.S.C. § 103(a) as being unpatentable over Magome, Irie, or Nishi.

By this paper, claims 19-24 are cancelled without prejudice or disclaimer. In addition, claims 25-32 have been added. The newly added independent claim 19 recites, *inter alia*, “an image information acquisition step of obtaining two-dimensional image information”, “a conversion step of converting the image information to a light-intensity signal”, “a determination step of determining whether the light-intensity signal … is valid or not”, and “a position information calculation step of calculating position information of the mark”. Support for these amendment is found throughout the application as originally filed, including for example Figs. 5, 6 and 11 with the associated text.

No new matter will be added to this application by entry of these amendments. Entry is requested.

Applicant respectfully asserts that the previous rejection of claims 19-24 under 35 U.S.C. § 112, ¶1 and 2 are rendered moot by the cancellation of claims 19-24.

The newly added claims 25-32 are patentably distinct from Magome, Irie, or Nishi, because none of the references teaches or suggests at least “calculating position information of the position detection mark from light-intensity signals of only valid lines other than light-intensity signals of invalid lines” as recited in claim 25.

Magome is directed to an alignment method wherein an alignment accuracy is improved by conducting processing of signals based on process deformation of marks obtained by scanning. According to Magome, a periodic signal obtained by scanning the mark is subject to Fourier integration processing and a phase angle including a fundamental wave component and a high-order component by calculation of a sine wave and a cosine component of Fourier conversion to detect position information of an average center position. (Magome, col. 2, line 40 to col. 3, line 44). However, Magome fails to teach 1) a conversion step of converting the image information to a light-intensity signal, and 2) a determination step of determining whether the light-intensity signal is valid or not; and finally 3) a position information calculation step of calculating position from light-intensity signals of only valid lines, all of which are recited in claim 25.

Irie is directed to an alignment method wherein the coordinate position of specific areas are measured and calculated by the statistic calculation. According to Irie, an EGA (“Enhanced Global Alignment”) method is used to calculate nonlinear error amount of sample shots. When detecting “peculiar shot”, Irie teaches, *inter alia*, a statistic method, wherein the nonlinear error amounts of all sample shots are averaged, and the deviation of the nonlinear error amount of each sample are then obtained. If there is a sample shot in which the error amount exceeds a predetermined allowed value, the sample shot is specified as the peculiar shot. (Irie, col. 13, lines 49-61). In other words, Irie discloses a determination step by judging whether an

individual sample shot is a “peculiar shot” through statistic calculation. However, Irie fails to teach 1) “converting the image information to a light-intensity signal”, 2) “determining whether the light-intensity signal is valid”, and 3) “calculating position information of the position detection mark from light-intensity signals of only valid lines”.

Nishi is directed to an alignment system wherein a first and second mark position detection means are provided for detecting alignment marks. Nishi teaches, *inter alia*, slice level to determine the bottom positions in the scanning direction in the form of binary modification. (Nishi, col. 11, lines 37-49, see also Fig. 7). According to Nishi, in Fig. 7, the slice levels SV1 to SV3 are set for upper, intermediate and lower portions of the bottom waveform respectively, and “[o]ne of these slice levels is selected experimentarily depending on the wafer process, wafer ground, etc” (Nishi, col. 11, lines 45-40). In other words, Nishi at least fails to teach a determination step of determining whether slice level is valid or not, and thus fails to teach to calculate position information from light-intensity signals of only valid lines.

Accordingly, as Applicants cannot find the determination step and position information calculation step of claim 25 in Magome, Irie or Nishie, at least independent claims 25 is respectfully asserted to be in condition for allowance. For at least the similar reasons, claims 26-32 also are respectfully asserted to be in condition for allowance.

Applicants have chosen in the interest of expediting prosecution of this patent application to distinguish the cited documents from the pending claims as set forth above. These statements should not be regarded in any way as admissions that the cited documents are, in fact, prior art.

Finally, Applicants have not specifically addressed the rejections of the dependent claims. Applicants respectfully submit that the independent claims, from which they depend, are

in condition for allowance as set forth above. Accordingly, the dependent claims also are in condition for allowance. Applicants, however, reserve the right to address such rejections of the dependent claims in the future as appropriate.

CONCLUSION

For the above-stated reasons, this application is respectfully asserted to be in condition for allowance. An early and favorable examination on the merits is requested. In the event that a telephone conference would facilitate the examination of this application in any way, the Examiner is invited to contact the undersigned at the number provided.

THE COMMISSIONER IS HEREBY AUTHORIZED TO CHARGE ANY ADDITIONAL FEES WHICH MAY BE REQUIRED FOR THE TIMELY CONSIDERATION OF THIS AMENDMENT UNDER 37 C.F.R. §§ 1.16 AND 1.17, OR CREDIT ANY OVERPAYMENT TO DEPOSIT ACCOUNT NO. 13-4500, ORDER NO. 1232-5156.

Respectfully submitted,
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Dated: September 7, 2006

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